WHAT IS CLAIMED IS:

1. A method for determining a concentration of an analyte in a material sample, said method comprising:

providing a sample element comprising a sample chamber at least partially defined by at least one window formed from a material having greater than about 1% wavelength-domain variation in absorptivity of electromagnetic radiation incident thereon; and

employing said sample element with an analyte detection system which determines the concentration of said analyte with clinically acceptable accuracy.

2. The method of Claim 1, wherein said wavelength-domain variation comprises a difference between an extremal absorptivity and a root-mean-squared absorptivity.

3. The method of Claim 1, wherein said wavelength-domain variation comprises a ratio of a standard deviation of absorptivity to a root-mean-squared absorptivity.

4. The method of Claim 1, wherein said wavelength-domain variation comprises a nominal variation.

5. The method of Claim 1, wherein said wavelength-domain variation is determined across a wavelength range consisting of infrared wavelengths.

6. The method of Claim 1, wherein said wavelength-domain variation is determined across a wavelength range consisting of mid-infrared wavelengths.

7. The method of Claim 1, wherein said wavelength-domain variation is greater than 2%.

8. The method of Claim 1, wherein said wavelength-domain variation is greater than 5%.

9. The method of Claim 1, wherein said wavelength-domain variation is greater than 10%.

10. The method of Claim 1, wherein said wavelength-domain variation is greater than 15%.

11. The method of Claim 1, wherein said wavelength-domain variation is greater than 20%.

12. The method of Claim 1, wherein said wavelength-domain variation is greater than 25%.

13. A method for estimating a concentration of an analyte in a material sample, said method comprising:

providing a sample element comprising a sample chamber at least partially defined by at least one window formed from a material having greater than about 1% wavelength-domain variation in absorbtivity of electromagnetic radiation incident thereon; and

employing said sample element with an analyte detection system which computes an estimated concentration of said analyte in said material sample, over a series of more than about 30 measurements, with a standard error of less than about 50 mg/dL at 95% confidence level, when compared to the actual concentration of said analyte.

14. The method of Claim 13, wherein said wavelength-domain variation comprises a nominal variation.

15. The method of Claim 13, wherein said wavelength-domain variation is determined across a wavelength range consisting of infrared wavelengths.

16. The method of Claim 13, wherein said wavelength-domain variation is determined across a wavelength range consisting of mid-infrared wavelengths.

17. A method for estimating a concentration of an analyte in a material sample, said method comprising:

providing a sample element comprising a sample chamber at least partially defined by at least one window formed from a material having greater than about 1% wavelength-domain variation in absorbtivity of electromagnetic radiation incident thereon; and

employing said sample element with an analyte detection system which computes an estimated concentration of said analyte in said material sample; said estimated concentration differing, over a series of more than about 30 measurements, from the actual concentration of said analyte with a root-mean-squared error of less than about 70 mg/dl.

18. The method of Claim 17, wherein said wavelength-domain variation is greater than 2%.

19. The method of Claim 17, wherein said wavelength-domain variation is greater than 5%.

20. The method of Claim 17, wherein said wavelength-domain variation is greater than 10%.

21. The method of Claim 17, wherein said wavelength-domain variation is greater than 15%.

22. The method of Claim 17, wherein said wavelength-domain variation is greater than 20%.

23. The method of Claim 17, wherein said wavelength-domain variation is greater than 25%.

24. A system for estimating the concentration of an analyte in a material sample, said system comprising:

a source of infrared radiation;

a detector positioned to detect infrared radiation emitted by the source, so that said source and said detector define an optical path therebetween;

a processor coupled to said detector; and

a sample element positioned within said optical path, said sample element comprising:

a sample chamber at least partially defined by at least one window formed from a material having greater than about 1% wavelength-domain variation in absorbtivity of electromagnetic radiation incident thereon,

wherein said material sample is positionable in said sample chamber and said sample chamber is positionable in said optical path, and wherein said processor calculates an estimated concentration of said analyte in said material sample in response to signals from said detector, said estimated concentration differing, over a series of more than about 30 measurements, from the actual concentration of said analyte with a root-mean-squared error of less than about 70 mg/dl.

25. The system of Claim 24, wherein said wavelength-domain variation comprises a nominal variation.

26. The system of Claim 24, wherein said wavelength-domain variation is determined across a wavelength range consisting of infrared wavelengths.

27. The system of Claim 24, wherein said wavelength-domain variation is determined across a wavelength range consisting of mid-infrared wavelengths.

28. A system for determining the concentration of an analyte in a material sample, said system comprising:

a source of infrared radiation;

a detector positioned to detect infrared radiation emitted by the source, so that said source and said detector define an optical path therebetween; and

a sample element positioned within said optical path, said sample element comprising:

a sample chamber at least partially defined by at least one window formed from a material having greater than about 1% wavelength-domain variation in absorbtivity of electromagnetic radiation incident thereon,

wherein said material sample is positionable in said sample chamber and said sample chamber is positionable in said optical path, and wherein said system determines the concentration of said analyte with clinically acceptable accuracy.

29. The system of Claim 28, wherein said wavelength-domain variation comprises a nominal variation.

30. The system of Claim 28, wherein said wavelength-domain variation is greater than 2%.

31. The system of Claim 28, wherein said wavelength-domain variation is greater than 5%.

32. The system of Claim 28, wherein said wavelength-domain variation is greater than 10%.

33. The system of Claim 28, wherein said wavelength-domain variation is greater than 15%.

34. The system of Claim 28, wherein said wavelength-domain variation is greater than 20%.

35. The system of Claim 28, wherein said wavelength-domain variation is greater than 25%.

36. A sample element for use in measuring the concentration of an analyte in a material sample, said element comprising:

a sample chamber at least partially defined by at least one window, said at least one window having greater than about 1% wavelength-domain variation in absorbance of electromagnetic radiation incident thereon.

37. The sample element of Claim 36, wherein said wavelength-domain variation comprises a difference between an extremal absorbance and a root-mean-squared absorbance.

38. The sample element of Claim 36, wherein said wavelength-domain variation comprises a ratio of a standard deviation of absorbance to a root-mean-squared absorbance.

39. The sample element of Claim 36, wherein said wavelength-domain variation comprises a nominal variation.

40. The sample element of Claim 36, wherein said first and second windows have, in combination, greater than about 1% wavelength-domain variation in absorbance of electromagnetic radiation incident thereon.

41. The sample element of Claim 36, wherein the wavelength-domain variation is determined across a wavelength range which comprises infrared wavelengths.

42. The sample element of Claim 36, wherein the wavelength-domain variation is determined across a wavelength range which comprises mid-infrared wavelengths.

43. The sample element of Claim 36, wherein the wavelength-domain variation is greater than 2%.

44. The sample element of Claim 36, wherein the wavelength-domain variation is greater than 5%.

45. The sample element of Claim 36, wherein the wavelength-domain variation is greater than 10%.

46. The sample element of Claim 36, wherein the wavelength-domain variation is greater than 15%.

47. The sample element of Claim 36, wherein the wavelength-domain variation is greater than 20%.

48. The sample element of Claim 36, wherein the wavelength-domain variation is greater than 25%.

49. The sample element of Claim 36, wherein the sample chamber is at least partially defined by a pair of opposing and generally parallel windows.

50. A sample element for use in measuring the concentration of an analyte in a material sample, said sample element comprising:

a sample chamber at least partially defined by at least one window, said at least one window formed from a material having greater than about 1% wavelength-domain variation in absorbtivity of electromagnetic radiation incident thereon.

51. The sample element of Claim 50, wherein said wavelength-domain variation comprises a difference between an extremal absorbance and a root-mean-squared absorbance.

52. The sample element of Claim 50, wherein said wavelength-domain variation comprises a ratio of a standard deviation of absorbance to a root-mean-squared absorbance.

53. The sample element of Claim 50, wherein said wavelength-domain variation comprises a nominal variation.

54. The sample element of Claim 50, wherein the wavelength-domain variation is greater than 2%.

55. The sample element of Claim 50, wherein the wavelength-domain variation is greater than 5%.

56. The sample element of Claim 50, wherein the wavelength-domain variation is greater than 10%.

57. The sample element of Claim 50, wherein the wavelength-domain variation is greater than 15%.

58. The sample element of Claim 50, wherein the wavelength-domain variation is greater than 20%.

59. The sample element of Claim 50, wherein the wavelength-domain variation is greater than 25%.

60. The sample element of Claim 50, wherein the sample chamber is at least partially defined by said window and an opposing, generally parallel second window.

61. A sample element for use in determining a concentration of an analyte in a material sample, said sample element comprising:

a sample chamber at least partially defined by at least one window, said at least one window having greater than about 1% wavelength-domain variation in absorbance of electromagnetic radiation incident thereon;

said sample chamber having an associated first optical pathlength in a first configuration and a second optical pathlength in a second configuration.

62. The sample element of Claim 61, wherein the sample element is adapted to be placed in the second configuration by compression of the sample element.

63. A sample element adapted to hold a sample in an optical path of a light beam for multiple optical transmission measurements to determine an analyte concentration of the sample, the sample element comprising:

a sample chamber adapted to contain the sample and having a chamber thickness;

at least one wall portion which at least partially defines the sample chamber, the wall portion having a wall thickness; and

an optical pathlength comprising the chamber thickness and the wall thickness, whereby the optical pathlength is adapted to be modified between subsequent optical transmission measurements.

64. The sample element of Claim 63, wherein the chamber thickness is adapted to be modified between subsequent optical transmission measurements.

65. The sample element of Claim 63, wherein the chamber thickness is adapted to be increased between subsequent optical transmission measurements.

66. The sample element of Claim 63, wherein the chamber thickness is adapted to be decreased between subsequent optical transmission measurements.

67. The sample element of Claim 63, wherein the wall thickness is adapted to be modified between subsequent optical transmission measurements.